

WHAT IS CLAIMED IS:

1           1.       A system for delivering content to a subscriber terminal on-demand  
2 through a communication network, the system comprising:  
3               a content preparation module for preencrypting the content offline to form pre-  
4 encrypted content;  
5               an on-demand module receiving the pre-encrypted content from the content  
6 preparation module, for storing, and transmitting the pre-encrypted content to the subscriber  
7 terminal when authorized;  
8               an encryption renewal system interfacing with the on-demand module to  
9 generate entitlement control messages allowing the pre-encrypted content to be decryptable  
10 for a designated duration; and  
11               a conditional access system for providing a periodical key to the encryption  
12 renewal system, to permit generation of the entitlement control messages that convey  
13 information required to decrypt the pre-encrypted content including the periodical key to the  
14 subscriber terminal.

1           2.       The system of claim 1 wherein the communication network is a cable  
2 network for distributing audio/video content from a cable central office to all or a subset of  
3 subscriber terminals.

1           3.       A method of delivering content from one or more cable systems to  
2 subscriber terminals within the cable systems, the cable systems being communicatively  
3 coupled to an offline encryption device, the method comprising:  
4               receiving by a first cable system, a request for the content from a first  
5 subscriber terminal of the first cable system;  
6               preencrypting, by the offline encryption device, the content to form pre-  
7 encrypted content prior to the step of receiving a request;  
8               generating an encryption record containing parameters employed for  
9 encrypting the content;  
10               based on the encryption record and a first key information, generating one or  
11 more control messages for permitting access to the pre-encrypted content; and  
12               transmitting the pre-encrypted content associated with the one or more control  
13 messages to the first subscriber terminal for decryption of the pre-encrypted content.

1                   4.     The method of claim 3 further comprising  
2                   receiving, by a second cable system, a request from a second subscriber  
3 terminal of the second cable system, and  
4                   based on the encryption record and a second key information, generating one  
5 or more control messages for permitting the second subscriber terminal to access the pre-  
6 encrypted content.

1                   5.     The method of claim 3 wherein the first key information is provided by  
2 a conditional access system that uses the key information to control the first subscriber  
3 terminal.

1                   6.     The method of claim 5 wherein the key information is for a key that is  
2 periodical and valid for a designated duration.

1                   7.     The method of claim 6 wherein the designated duration is shortly  
2 before, contemporaneous with, or shortly after the first key is changed by the conditional  
3 access system.

1                   8.     The method of claim 3 wherein the one or more control messages is a  
2 first entitlement control message for conveying information to the first subscriber terminal to  
3 compute a key.

1                   9.     The method of claim 3 further comprising  
2 changing the first key information after a designated duration, and reporting  
3 the key change by the first cable system.

1                   10.    The method of claim 3 further comprising  
2 retrofitting a second entitlement control message to the pre-encrypted content  
3 for permitting access to the pre-encrypted content after the first key information expires.

1                   11.    The method of claim 10 wherein the retrofitting of the second control  
2 message employs a second key information.

1                   12.    The method of claim 11 wherein the step of retrofitting the second  
2 entitlement control message is synchronized with changing of a first key information to the  
3 second key information.

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1                   13.    The method of claim 3 further comprising  
2                   providing the parameters from an encryption renewal system that generates the  
3 one or more entitlement control messages.

1                   14.    The method of claim 13 wherein the step of generating an encryption  
2 record is by an offline encryption system.

1                   15.    The method of claim 4 further comprising  
2                   providing first and second service tiers in the first cable system to further limit  
3 access to the pre-encrypted content.

1                   16.    The method of claim 15 further comprising  
2                   generating a first entitlement control message allowing the first subscriber  
3 terminal to access the pre-encrypted content only in the first service tier, and  
4                   generating a second entitlement message allowing a second subscriber  
5 terminal to access the pre-encrypted only in the second service tier.

1                   17.    A system for delivering first and second content to a subscriber  
2 terminal on-demand through a communication network, the system comprising:  
3                   means for pre-encrypting the first and second content offline to form first and  
4 second pre-encrypted content, and for generating a first encryption record associated with the  
5 first pre-encrypted content, and a second encryption record for the second pre-encrypted  
6 content;  
7                   means for generating a first and second entitlement messages that allow  
8 decryption of the first and second pre-encrypted contents, respectively;  
9                   a conditional access system for providing information included in the first and  
10 second entitlement messages by the means for generating; and  
11                   means for receiving the pre-encrypted content from the means for pre-  
12 encrypting, forwarding the first and second encryption records to the means for generating  
13 which generates the first and second entitlement messages for forwarding to the subscriber  
14 terminal.

1                   18.    The system of claim 17 further comprising means for generating a  
2 third entitlement message.

1 19. The system of claim 18 wherein the third entitlement message is for  
2 permitting access to the first pre-encrypted content after expiration of the first entitlement  
3 message.

1 20. A method using an encryption renewal system, the method permitting  
2 first and second communication systems to control subscriber access to pre-encrypted content  
3 that was previously encrypted offline, the method comprising:  
4 receiving, by the encryption renewal system, a first cryptographic information  
5 from the first communication system;  
6 receiving an encryption record containing parameters employed during  
7 encryption to form the pre-encrypted content; and  
8 generating for the first communication system, a first control message for  
9 providing access to the pre-encrypted content based on the first cryptographic information  
10 and the first encryption record.

1 21. The method of claim 20 further comprising  
2 receiving, by the encryption renewal system, a second cryptographic  
3 information from the second communication system;  
4 receiving the encryption record containing parameters employed during  
5 encryption to form the pre-encrypted content; and  
6 generating for the second communication system, a second control message  
7 for providing access to the pre-encrypted content based on the second cryptographic  
8 information and the encryption record.

1 22. The method of claim 20 further comprising generating a third control  
2 message upon expiration of the first control message, to provide access to the pre-encrypted  
3 content.

1 23. The method of claim 20 further comprising  
2 retrieving entitlement control messages associated with the pre-encrypted  
3 content; and  
4 specifying a tier to which a subscriber is authorized when the pre-encrypted  
5 program is purchased.

1                   24.    A system for delivering content to a subscriber terminal on-demand  
2 through a point-to-point communication network, the system comprising:  
3                    an offline encryption system having software containing one or more  
4 instructions for pre-encrypting the content to form pre-encrypted content before a content  
5 request is received from the subscriber terminal;  
6                    a video on-demand system including software having one or more instructions  
7 for receiving the pre-encrypted content from the offline encryption system, and forwarding  
8 the pre-encrypted content to the subscriber terminal; and  
9                    an encryption renewal system interfacing with the offline encryption system to  
10 provide encryption parameters for encrypting the content, and interfacing with the video on-  
11 demand system to generate entitlement control messages allowing the pre-encrypted content  
12 to be decryptable for a designated duration, wherein the entitlement control messages are  
13 generated by using a periodical key.

1                   25.    The system of claim 24 further comprising a conditional access system  
2 having software interfacing with a billing system to coordinate subscriber access to the pre-  
3 encrypted content based on a subscriber purchase.

1                   26.    The system of claim 24 further comprising an interactive system  
2 including software having instructions for providing two-way subscriber interaction between  
3 the subscriber system and the video on-demand system.

1                   27.    The system of claim 24 further comprising one or more service tiers to  
2 secure the pre-encrypted content.

1                   28.    The system of claim 24 wherein the encryption renewal system  
2 generates first and second versions of an entitlement control message, for accessing the pre-  
3 encrypted content in a first and a second tier, respectively.

1                   29.    The system of claim 24 further comprising  
2 retrieving entitlement control messages associated with the pre-encrypted  
3 content, and specifying the tier for which a subscriber is authorized when the pre-encrypted  
4 program is purchased.



10 storing the content by the second communication system, wherein the content  
11 is distributable by the first communication system to a first subscriber within the first  
12 communication system upon request from the first subscriber, and the content is distributable  
13 by the second communication system to a second subscriber within the second  
14 communication system upon request.

1 39. The method of claim 38 wherein the pre-encrypted content is  
2 encrypted prior to transmitting the content to the first and second communication system.

1 40. The method of claim 20 further comprising assigning subscriber tiers,  
2 so that only a designated number of subscribers share each subscriber tier within a fiber node.